

REMARKS

By the above amendment, each of independent claims 1, 8 and 11 have been amended to further define features of the present invention. More particularly, claim 1, for example, recites the feature that the electron beam image information includes information of average slope angle of a side wall of the fine pattern, information of a ratio of bottom roundness of the fine pattern and information of a ratio of top roundness of the fine pattern which are quantified by using information of a first-order differential waveform. Independent claims 8 and 11 have been amended to recite similar features which are described at page 8, lines 11 - 24 of the specification in relation to Fig. 4. As described therein, a first order differentiation waveform as shown in Fig. 4(c), is obtained from an electron beam image signal of a device pattern to quantify the average slope angle, a ratio of the bottom roundness B/H , and a ratio of the top roundness T/H , so as to enable judging of the shape of the pattern. Thus, the recited features of independent claims 1, 8 and 11 are supported by the specification and drawings of this application.

Additionally, by the present amendment, new claims 16 - 18 have been presented directed to the apparatus of the present invention, wherein independent claim 16 corresponds in apparatus format to features set forth in claim 1 and the dependent claims, and like the other independent claims of the application recites the feature of extracting information from the electron beam image data including extracting information from the electron beam image data including information of average slope angle of a side wall of the second pattern, information of a ratio of bottom roundness of the second pattern and information of a ratio of top roundness of the second pattern which are quantified by using information of a first order differential waveform. Applicants submit that the aforementioned features of all

independent claims of this application are not disclosed or taught in the cited art as will become clear from the following discussion.

As to the rejection of claims 1 - 4 and 8 - 10 under 35 USC 102(e) as being anticipated by Houge et al (US Patent No. 6,651,226); the rejection of claim 11 under 35 USC 103(a) as being unpatentable over Houge et al ('226) in view of Official Notice (MPEP §2144.03); and the rejection of claims 5 - 7 and 12 - 15 under 35 USC 103(a) as being unpatentable over Houge et al ('226) further in view of Lorusso (US Patent No. 6,930,308); such rejections are traversed insofar as they are applicable to the present claims, and reconsideration and withdrawal of the rejections are respectfully requested.

Irrespective of the position set forth by the Examiner concerning the disclosure of Houge et al ('226), applicants submit that Houge et al ('226) does not disclose or teach measuring of the three dimensional shape of a fine pattern by use of optically detected height information and electron beam image information, which electron beam image information includes information of average slope angle of a sidewall of the fine pattern, information of a ratio of bottom roundness of the fine pattern and information of a ratio of top roundness of the fine pattern, which informations are quantified by using information of a first order differential waveform, as described with respect to Fig. 4 of the drawings of this application, and as now set forth in each of the independent claims 1, 8, 11 and 16 of this application. Applicants submit that Houge et al ('226) is silent with respect to the aforementioned features, such that applicants submit that all claims patentably distinguish over Houge et al ('226) in the sense of 35 USC 102 and 35 USC 103, and all claims should be considered allowable thereof.


With respect to the combination of Houge et al ('226) and Official Notice or the combination of Houge et al ('226) with Lorusso et al, irrespective of the contentions by the Examiner, the taking of Official Notice is challenged, and the Examiner is requested to cite art to support the Examiner's position. In any event, neither the taking of Official Notice or Lorusso et al overcome the deficiencies of Houge et al ('226) as pointed out above with respect to the independent claims and therewith the dependent claims. Thus, applicants submit that all claims recite features not disclosed or taught in the cited art and all claims should be considered allowable thereover.

In view of the above amendments and remarks, applicants submit that all claims present in this application patentably distinguish over the cited art and should therefore be considered allowable. Accordingly, issuance of an action of favorable nature is courteously solicited.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 501.43127X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

/Melvin Kraus/ 
Melvin Kraus
Registration No. 22,466

MK/jla
(703) 312-6600